UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/593,793	06/13/2000	Jiangchun Xu	210121.427C15	5630

500 7590 10/23/2007

SEED INTELLECTUAL PROPERTY LAW GROUP PLLC
701 FIFTH AVE
SUITE 5400
SEATTLE, WA 98104

EXAMINER	
BLANCHARD, DAVID J	

ART UNIT	PAPER NUMBER
1643	

MAIL DATE	DELIVERY MODE
10/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/593,793	XU ET AL.	
	Examiner	Art Unit	
	David J. Blanchard	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2007 and 22 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19,61 and 63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19, 61 and 63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-18, 20-60, 62 and 64-65 are cancelled.

Claim 61 has been amended.

2. Claims 19, 61 and 63 are pending and under consideration.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Objections Withdrawn

4. The objection to the specification as disclosing various US Application serial numbers on the first line of the specification whose status has changed and require updating is withdrawn in view of the amendments to the specification filed 8/22/2007.

Rejections Maintained

5. The rejection of claims 61, 19 and 63 under 35 U.S.C. 103(a) as being obvious over Momin et al (U.S. Patent 6,146,632, 102(e) date 7/2/1996) and Billing-Mendel et al (U.S. Patent 6,130,043, field 5/1/1998, Ids reference AC filed 1/24/2003) and Apostolopoulos et al (Vaccine, 14(9):930-938, 1996) is maintained.

The response filed 8/21/2007 again reviews the individual teachings of the cited references and submits that arriving at the claimed invention would require a teaching in the prior art that a polypeptide of SEQ ID NO:113 is, in fact, a human T-cell immunogen and that, in addition, a T-cell eptiope is present at residues corresponding to 367-375 of SEQ ID NO:113, which applicant asserts is not found in the prior art. Applicant argues that Billing-Mendel is concerned with humoral B-cell immune responses, particularly humoral immune responses for generating diagnostic antibodies, not with cellular immune responses for stimulating T-cells. Absent this teaching by Billing-Mendel, the skilled reviewer of Momin would not find motivation to use a polypeptide of Billing-Mendel in the adjuvant compositions described by Momin et al, but instead would seek T-cell antigens in order that the cellular immune response to the antigens might be

improved using the adjuvant compositions of Momin et al. Applicant asserts that any reasonable expectation of arriving at Applicant's claimed invention, and thereby stimulating a human T-cell response specific for SEQ ID NO:113 is clearly found in Applicants' disclosure but not the prior art, which is improper. Applicant states that even to the extent that one skilled in the art was, for the sake of discussion, to derive motivation to combine the cited references in the manner suggested by the Examiner, there would have nevertheless been no reasonable expectation of success of successfully eliciting a human T-cell response using the polypeptide, since the prior art is completely silent on this point. In this respect, the examiner's position is predicated on an impermissible obvious to try standard. Applicants' arguments have been fully considered but are not found persuasive. It is reiterated that Momin et al teach anti-cancer compositions comprising a cancer antigen and 3 D-MPL and QS21 (saponin), which are preferential stimulators of a Th1 cellular immune response and Billing-Mendel et al teach the polypeptide of SEQ ID NO:36 expressed in prostate cancer tissue, which shares 100% amino acid identity with residues 299-529 of the instantly claimed SEQ ID NO:113 and Apostolopoulos et al teach that induction of a humoral immune response (i.e., Th2 response) gives poor tumor protection accompanied by little cellular immunity (i.e., Th1 response), however, when a cellular immune response is induced, this results in significant tumor protection, cytotoxic T lymphocytes and little antibody production. Therefore, one of ordinary skill in the art would have been motivated to modify the immunogenic composition of Momin et al with the prostate cancer antigen of Billing-Mendel et al and administer the immunogenic composition to prostate cancer patients for inducing a Th1-type immune response, the motivation to make the above modification is made explicit in the teachings of Apostolopoulos et al, which indicate that the induction of a Th2-type immune response or antibody response gives poor tumor protection and little cellular immunity, whereas induction of a cellular or Th1-type immune response results in significant tumor protection and little antibody production. Thus, there would be an advantage to inducing a Th1-type immune response in prostate cancer patients by administering an immunogenic composition comprising the prostate cancer antigen of Billing-Mendel (i.e., SEQ ID NO:36) and 3 D-MPL and QS21

(saponin). While Applicants' argue that the examiner's conclusion of obviousness is based on improper hindsight reasoning, applicant is reminded that "[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). As set forth in the previous Office Action and reiterated above, the instant rejection is based solely on the teachings found in the cited references and the knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made, and as such the examiner's conclusion of obviousness is proper. Applicants' argument that a proper finding of obviousness in the present case would require some teaching or recognition in the prior art that the polypeptide of Billing-Mendel is a T-cell antigen or that residues 367-375 of SEQ ID NO:113 are a naturally processed T-cell epitope is not found persuasive for the following reasons. The basis on which the instant rejection was set forth and is presently being maintained is discussed supra, and while Billing-Mendel do not teach that their polypeptide is a T cell immunogen or that residues 367-375 are a T cell epitope, applicant is reminded that "The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious." *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Mere recognition of latent properties in the prior art does not render nonobvious an otherwise known invention. *In re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) (Claims were directed to grooved carbon disc brakes wherein the grooves were provided to vent steam or vapor during a braking action. A prior art reference taught noncarbon disc brakes which were grooved for the purpose of cooling the faces of the braking members and eliminating dust. The court held the prior art references when combined would overcome the problems of dust and overheating solved by the prior art and would inherently overcome the steam or vapor cause of the problem relied upon for patentability by applicants. Granting a patent on the discovery of an unknown but

inherent function (here venting steam or vapor) "would remove from the public that which is in the public domain by virtue of its inclusion in, or obviousness from, the prior art." 596 F.2d at 1022, 201 USPQ at 661.); *In re Baxter Travenol Labs.*, 952 F.2d 388, 21 USPQ2d 1281 (Fed. Cir. 1991). Again, the T cell epitope corresponding to amino acid residues 367-375 of SEQ ID NO:113 is a latent property of the polypeptide of SEQ ID NO:36 of Billing-Mendel, which is a polypeptide fragment of SEQ ID NO:113 comprising amino acid residues 367-375 of SEQ ID NO:113 as presently claimed. See MPEP 2145 (II).

Applicants' argument that even if one of ordinary skill in the art decided to try to combine the polypeptide of Billing-Mendel et al, with a Th1-type immunostimulant of Momin et al, there would still be no reasonable expectation that a human T-cell response could even be successfully elicited has been fully considered but is not found persuasive. Momin et al teach *and claim* immunogenic compositions comprising an antigen and 3 D-MPL and QS21 (saponin), which are preferential stimulators of a Th1 cellular immune response and Momin et al teach that the composition successfully elicits a cellular immune response (i.e., Th1-type response) when using a variety of viral, bacterial and tumor antigens. Thus, Momin et al contain a detailed enabling methodology, and evidence suggesting that a composition comprising the tumor antigen of Billing-Mendel would successfully elicit a Th1-type immune response. Applicant is reminded that, obviousness does not require absolute predictability, however, at least some degree of predictability is required. Evidence showing there was no reasonable expectation of success may support a conclusion of nonobviousness. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). Applicant has not submitted any objective evidence that the composition of the prior art would not would not induce a predominantly Th1-type immune response.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references and the rejection is maintained.

6. The rejection of claims 19, 61 and 63 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement is maintained. The claims contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The response filed 8/21/2007 states that claim 61 has been amended to recite that the claimed polypeptide is a polypeptide comprising SEQ ID NO:113 or is a fragment of SEQ ID NO:113 that comprises residues 367-375. Applicant states that the claims are thus drawn to polypeptides of SEQ ID NO:113 which minimally comprise Applicants' identified T cell epitope and the claims are not drawn to polypeptides having unknown and/or different structures and functions from the polypeptide of SEQ ID NO:113. Applicants' arguments have been fully considered but are not found persuasive. While the claims have been amended to recite fragments of SEQ ID NO:113 comprising residues 367-375 of SEQ ID NO:113, the specification discloses that the polypeptide of the claimed invention can be an active fragment, variant, or fusion protein, wherein an active fragment includes a whole or a portion of a polypeptide which is modified by mutagenesis, addition, deletion, or substitution and where a variant is defined as comprising one or more substitutions, deletions, additions and/or insertions including those polypeptides having at least 70% sequence identity to the disclosed polypeptides (i.e., SEQ ID NO:113) (see pp. 80-84, for example). The transitional term "comprising" is inclusive or open-ended and does not exclude additional, unrecited elements (MPEP 2111.03). Thus, the claims still encompass an extremely large genus of polypeptides defined only by 9 amino acids out of the 553 amino acids of SEQ ID NO:113 and comprising undefined sequences at the N- and/or C-terminus of amino acids 367-375 of SEQ ID NO:113, wherein the genus of polypeptides may have very different structures and functions from the polypeptide of SEQ ID NO:113. The only identifying characteristic of the claimed genus of polypeptides is a partial structure of human prostate tumor antigen of SEQ ID NO:113, i.e., amino acid residues 367-375 of SEQ ID NO;113. There is insufficient written description encompassing the polypeptide "comprising" at least amino acid residues

367-375 of SEQ ID NO:113 that stimulates a human cytotoxic T lymphocyte response specific for SEQ ID NO:113 because the relevant identifying characteristics of the genus such as structure or other physical and/or chemical characteristics are not set forth in the specification as-filed, commensurate in scope with the claimed invention. Conception does not occur unless one has a mental picture of the structure of the molecule, or is able to define it by its method of preparation, its physical or chemical properties, or whatever characteristics sufficiently distinguish it. Further, it is not sufficient to define the polypeptide solely by its principle property, e.g., stimulating a human cytotoxic T lymphocyte response specific for SEQ ID NO:113, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property. Mere idea or function is insufficient for written description; isolation and characterization at a minimum are required. A description of what a material does, rather than what it is, usually does not suffice. *Eli Lilly*, 119 F.3d at 1568, 43 USPQ2d at 1406.

The written description in the present case only sets forth residues 367-375 of SEQ ID NO:113 in the context of the P501S polypeptide (i.e., SEQ ID NO:113), and as such the description does not set forth a representative number of species sufficient to constitute adequate written description because the specification does not describe a sufficient variety of species to reflect the variation within the genus of polypeptide that comprise residues of 367-375 of SEQ ID NO:113 and the genus is highly variant, inclusive to a myriad of fragments of SEQ ID NO:113 containing amino acid additions, deletions, or substitutions as discussed supra. A "representative number of species" means that the species, which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus. The disclosure of only one species encompassed within a genus adequately describes a claim directed to that genus only if the disclosure "indicates that the patentee has invented species sufficient to constitute the gen[us]." See *Enzo Biochem*, 323 F.3d at 966, 63 USPQ2d at 1615; *Noelle v. Lederman*, 355 F.3d 1343, 1350, 69 USPQ2d 1508, 1514 (Fed. Cir. 2004) (Fed. Cir. 2004)("[A] patentee of a biotechnological invention cannot necessarily

claim a genus after only describing a limited number of species because there may be unpredictability in the results obtained from species other than those specifically enumerated."). "A patentee will not be deemed to have invented species sufficient to constitute the genus by virtue of having disclosed a single species when ... the evidence indicates ordinary artisans could not predict the operability in the invention of any species other than the one disclosed." *In re Curtis*, 354 F.3d 1347, 1358, 69 USPQ2d 1274, 1282 (Fed. Cir. 2004). As evidenced by the art of Skolnick et al, Metzler et al, Mikayama et al and Burgess et al cited in the previous Office Action, protein chemistry is probably one of the most unpredictable areas of biotechnology. Thus, one of ordinary skill in the art could not predict the operability of any species embraced within the genus of polypeptides "comprising" amino acid residues 367-375 of SEQ ID NO:113 as identical to the disclosed polypeptide of SEQ ID NO:113.

Therefore, only the polypeptide of SEQ ID NO:113 and the peptide consisting of amino acid residues 367-375 of SEQ ID NO:113, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

7. No claims are allowed.

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Blanchard whose telephone number is (571) 272-0827. The examiner can normally be reached at Monday through Friday from 8:00 AM to 6:00 PM, with alternate Fridays off. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms, can be reached at (571) 272-0832.

The official fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/David J. Blanchard/
Primary Examiner, A.U. 1643